

WE CLAIM:

1. A device comprising:  
an emitter electrode;  
a resistor layer;  
5 a patterned electrically conductive seed  
layer overlying part of the resistor layer;  
a dielectric layer overlying the resistive  
layer;  
a gate electrode overlying the dielectric  
10 layer above the resistive layer and having  
lateral edges in approximate vertical alignment  
with lateral edges of the dielectric layer; and  
a carbon based electron-emissive element  
(a) positioned over the seed layer above the  
15 emitter electrode and (b) situated in a  
composite opening extending through the gate  
electrode and the dielectric layer.
2. A device comprising:  
a group of laterally separated emitter  
electrodes;  
an electrically resistive layer overlying  
parts of the emitter electrodes;  
25 a dielectric layer overlying the resistive  
layer;  
a plurality of laterally separated gate  
electrodes overlying the dielectric layer above  
the resistive layer; and  
30 a multiplicity of electron-emissive  
elements (a) positioned over a patterned seed  
layer above the emitter electrodes and (b)  
situated in composite openings extending  
through the gate electrodes and the dielectric  
35 layer.

3. A device as in Claim 2 wherein the dielectric layer comprises a dual layer of silicon nitride and silicon dioxide.

5        4. A device as in Claim 3 wherein the dielectric layer comprises a single layer of silicon nitride.

10       5. A device as in Claim 3, wherein the dielectric layer comprises a single layer of silicon dioxide.

15       6. A device as in Claim 2 wherein the multiplicity of electron-emissive-elements comprise carbon.

20       7. A device as in Claim 6 wherein the multiplicity of electron-emissive-elements are filaments.

25       8. A device as in Claim 7 wherein the patterned layer comprises a plurality of laterally separated seed strips, each extending laterally over the resistor layer.

30       9. A device as in Claim 8 wherein a different one of said plurality of laterally separated seed strips underlies a group of said electron-emissive elements.

35       10. A device as in Claim 9 wherein said group of electron-emissive elements defines a pixel.

11. A device as in Claim 10 wherein the electron-emissive elements are allocated into a

number of laterally separated sets, each comprising multiple electron-emissive elements; at least one of the set overlying each conductive strip.

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12. A carbon based emitter fabrication method comprising:

furnishing and initial structure in which  
10 (a) an emitter electrode overlies a glass substrate, (b) a gate electrode overlies a dielectric layer that overlies a resistor layer and (c) a group of electron-emissive elements  
is disposed on a seed layer in a composite  
15 opening extending through the gate electrode and the dielectric layer; and

patterning the seed layer to form a  
plurality strips, each one of said plurality of  
20 strips underlying a set of the electron-emissive elements.

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